

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

23 April 2001 (23.04.01)

International application No.

PCT/BE00/00088

Applicant's or agent's file reference

30313-WO-U

International filing date (day/month/year)

20 July 2000 (20.07.00)

Priority date (day/month/year)

23 July 1999 (23.07.99)

Applicant

NASILOWSKI, Tomasz, Andrzej et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

11 January 2001 (11.01.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Zakaria EL KHODARY

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 30313-W0-U	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> FOR FURTHER ACTION </div> <div style="font-size: small;"> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. </div> </div>	
International application No. PCT/BE 00/ 00088	International filing date (day/month/year) 20/07/2000	(Earliest) Priority Date (day/month/year) 23/07/1999
Applicant BARCO ELBICON N.V.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☒ because this figure better characterizes the invention.

1
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

/BE 00/00088

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 G02B6/34 B07C5/342 G01N21/47

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B B07C G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 19800 A (NAT RECOVERY TECH INC ; RICH JOHN T (US); SOMMER EDWARD J JR (US)) 14 May 1998 (1998-05-14) cited in the application	12-14, 21-24, 26
Y	abstract	1, 15-18, 25
A	page 8, line 26 - page 9, line 9 page 10, line 24 - line 32 page 14, line 9 - last line figures 3-5	5
Y	US 5 729 473 A (ROMERO GILLES ET AL) 17 March 1998 (1998-03-17) cited in the application	1
A	abstract column 5, line 7 - line 11 column 7, line 7 - line 44 figure 1	7
	--- -/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

2 November 2000

Date of mailing of the international search report

09/11/2000

Name and mailing address of the ISA

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Authorized officer

Verdoodt, E

INTERNATIONAL SEARCH REPORT

International Application No

BE 00/00088

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 926 262 A (LOUDERMILK ALAN R ET AL) 20 July 1999 (1999-07-20) column 22, line 49 -column 23, line 2; figures 1,3,10B ----	15-18
A	WO 98 23394 A (NIKULA JARMO ;SOIKKELI JORMA (FI); HALTON SYSTEM OY (FI)) 4 June 1998 (1998-06-04) abstract figures 1C,1D,2 page 5, line 8 - line 29 page 6, line 9 -page 7, line 2 ----	1
A	JP 61 245029 A (KAMIYA DENSHI KOGYO KK) 31 October 1986 (1986-10-31) abstract ----	1
X	NL 8 720 394 A (BRITISH PETROLEUM CO PLC) 1 July 1988 (1988-07-01) cited in the application Y page 5, line 21 -page 6, line 19 figures 1,2,5 ----	12,13 25
A	US 4 863 041 A (BAILEY ROGER F) 5 September 1989 (1989-09-05) abstract column 8, line 66 -column 9, line 20 figure 1 ----	1,2,10
A	US 5 736 410 A (ROSSI MICHEL J ET AL) 7 April 1998 (1998-04-07) figure 6 column 35, line 41 -column 36, line 15 ----	1-4,6-9
X	US 5 351 117 A (STEWART ANDREW D G ET AL) 27 September 1994 (1994-09-27) cited in the application abstract column 16, line 18 - line 43 figure 11 ----	12,13
A	US 3 786 266 A (REID C ET AL) 15 January 1974 (1974-01-15) figures 4,5,14 column 4, line 53 -column 5, line 21 column 10, line 2 - line 22 ----	24
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

BE 00/00088

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International Application No

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INTERNATIONAL SEARCH REPORT

Information on patent family members



International Application No

/BE 00/00088

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 30313-WO-U		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/BE00/00088	International filing date (day/month/year) 20/07/2000	Priority date (day/month/year) 23/07/1999	
International Patent Classification (IPC) or national classification and IPC G02B6/34			
Applicant BARCO ELBICON N.V. et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 9 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input checked="" type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input checked="" type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 11/01/2001		Date of completion of this report 31.10.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Stenger, M Telephone No. +49 89 2399 7353 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/BE00/00088

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-19 as originally filed

Claims, No.:

1-26 as originally filed

Drawings, sheets:

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/BE00/00088

- ☐ the drawings, sheets:
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)
6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:
- ☐ restricted the claims.
- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
- ☐ not complied with for the following reasons:
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☒ all parts.
- ☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 3-9, 11, 16-21
	No:	Claims 1, 2, 10, 12-15, 22-26
Inventive step (IS)	Yes:	Claims
	No:	Claims 3-9, 11, 16-21

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/BE00/00088

Industrial applicability (IA) Yes: Claims 1-26
 No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Section IV:

The application does not meet the requirements of Rule 13.1 PCT (unity) for the reasons laid out in the invitation to pay additional fees or to restrict the claims. In response to that invitation, the applicant chose to pay additional fees. Therefore, the whole application as originally filed including 3 different inventions is the object of the international preliminary examination.

Section V:

1.) Invention 1 (Claims 1 to 11):

1.1) Claim 1:

US-A-4863041 discloses an optical sorting apparatus for sorting individual objects such as beans, nuts and other agricultural products, comprising (c.1, l.4-14):

- a viewing head for analysing objects
- delivery means to deliver the products to the viewing head for optical analysis and
- means for rejecting products which do not meet predetermined analysis criteria

The viewing head, in the embodiment shown in the figure (see also c.8, l.52-c.9, l.33), is provided with 3 light sources 11, 12, 33. The light produced by these sources is coupled into optic fibres/cables 3, 5, 6, 7, 18, 20, 21, 22, which make the light meet the products to be sorted either by background assemblies B1 to B4 or by viewing assemblies V1 to V4, these assemblies being part of the viewing head. It is obvious, that the optic fibres/cables and the assemblies serve as an alignment system for the light from the aforementioned sources: each viewing assembly corresponds to a background assembly (c.8, l.56-60); furthermore, optic fibres always align light that is coupled into them, as long as their ends are fixed and not free to move.

The subject-matter of claim 1 of the present application can not be considered as new according to article 33 (2) PCT, since all the features of claim 1 of the present application are disclosed in US-A-4863041.

Please note further, that the subject-matter of claim 1 of the present invention differs from both WO-A1-9819800 (p.5, l.7-34; p.8, l.26-30; fig.5) and NL-A-8720394 (p.5, l.21-p.6, l.19; fig.1) only in that at least two light sources are

present. The person skilled in the art would combine the teaching of either one of these documents with the teaching of either US-A-4863041 or US-A-5729473, where two light sources are shown (fig.2) and use is made of optical fibres (c.7, l.7-53). In US-A-5736410 also, the light of several laser diodes with different wavelengths is combined in one beam via fibre optics (fig.6, c.35, l.54-63). Thereby, the person skilled in the art would arrive at the subject-matter of claim 1 of the present invention; thus, claim 1 can not be regarded as involving an inventive step compared to these documents.

Please note, that no new technical effect appears by the use of at least two light sources. It is not even specified in claim 1, that these sources produce light with different wavelengths.

1.2) Claims 2 to 11:

The features of claims 2 and 10 are also disclosed in US-A-4863041 (see figure; c.4, l.15-23; c.9, l.4). Thus, they also can not be considered as new. The features of claims 3 to 9 and 11, insofar as they are not known from the documents cited in the Search Report for the same purpose as in the present application (laser diode: WO-A1-9819800; different wavelengths: US-A-5729473; fused optical wavelength technology: US-A-5050952), are generally known to a person skilled in the art, and therefore, do not produce an inventive step.

2.) Invention 2 (Claims 12 to 21):

2.1) Claim 12:

US-A-4863041 discloses an optical sorting apparatus for sorting individual objects such as beans, nuts and other agricultural products, comprising (c.1, l.4-14):

- a viewing head for analysing objects on the basis of colour, i.e., on the basis of light reflected by these objects/products
- delivery means to deliver the products to the viewing head for optical analysis and
- means for rejecting products which do not meet predetermined analysis criteria

The viewing head, in the embodiment shown in the figure (see also c.8, l.52-c.9, l.33); is provided with optic fibres/cables 18, 20, 21, 22, whose one end is fed into a detecting arrangement 51. Each of these fibres/cables selectively collects the

light produced by the corresponding illuminating cable and reflected by the product, or, when there is no product present, selectively collects the light emitted by the corresponding background assembly.

The subject-matter of claim 12 of the present application can not be considered as new according to article 33 (2) PCT, since all the features of claim 1 of the present application are disclosed in US-A-4863041.

Furthermore, all the features of claim 12 of the present application are also disclosed in each of documents US-A-3786266 (fig.s 4 and 14, c.9, l.63-c.10, l.39), WO-A1-9819800 (fig.5), NL-A-8720394 (fig.1), and US-A-5351117 (fig.11, c.16, l.18-43).

2.2) Claims depending on claim 12:

The additional features of claim 13 are also disclosed in each of the documents US-A-3786266, US-A-4863041, WO-A1-9819800 and NL-A-8720394. Thus, claim 13 is not new either. The same holds for claim 22, taken in combination with the subject-matter of claim 12.

The additional features of claims 14 and 15 are also disclosed in US-A-3786266 (fig.4-5; c.4, l.53-c.5, l.21). Therefore, these claims are not new either.

The features of claims 16 and 18 are disclosed in US-A-5926262 (fig.s 1, 3 and 10b); furthermore, each of these claims concerns just one of several straightforward design possibilities known to a person skilled in the art, with no new technical effect occurring. Thus, these claims do not produce an inventive step.

The features of claims 17 and 19 to 21 are generally known to a person skilled in the art, and therefore, do not produce an inventive step.

3.) Invention 3 (Claims 23 to 26):

3.1) Claim 23:

US-A-4863041 discloses an optical sorting apparatus for sorting individual objects such as beans, nuts and other agricultural products, comprising (c.1, l.4-14):

- a viewing head for analysing objects
- delivery means to deliver the products to the viewing head for optical analysis and

- means for rejecting products which do not meet predetermined analysis criteria

The viewing head, in the embodiment shown in the figure (see also c.8, l.52-c.9, l.33), is provided with 4 optic cables 18, 20, 21, 22, each of them being common for receiving and illuminating purposes during the inspection (see figure; c.8, l.8-15).

The subject-matter of claim 23 of the present application can not be considered as new according to article 33 (2) PCT, since all the features of claim 1 of the present application are disclosed in US-A-4863041.

Furthermore, all the features of claim 23 of the present invention are also disclosed in NL-A-8720394 (fig.1), the characterizing features being represented by the linear bundle of optic fibres (alternatingly denoted 21 and 22) being disposed transversely across the conveying path of the products. Moreover, all the features of claim 23 of the present invention are also disclosed in US-A-3786266 (fig.s 4 and 14, c.9, l.63-c.10, l.39).

3.2) Claims depending on claim 23:

The additional subject-matter of each of claims 24, 25 and 26 (taking, e.g., a combination of the features of claims 23 and 24) is also comprised in US-A-4863041 (see figure). Thus, these claims are not new either. The additional subject-matter of claim 24 is also disclosed in US-A-3786266, where even one common lens 18 (instead of a whole system) is used.

4.) Industrial applicability:

The industrial applicability of all 3 inventions is obvious.

Section VII:

- 1.) The new independent claims are not correctly limited against US-A-4863041 as required by Rule 6.3(b).
- 2.) The relevant prior art known from US-A-4863041, US-A-5050952, US-A-378266, US-A-5926262, US-A-5351117 and US-A-5736410 is not cited in the description (Rule 5.1(a)(ii) PCT).

Section VIII:

- 1.) The term "waveguide" usually means a metallic tube which can confine and guide the propagation of electromagnetic waves in the hollow space along the lengthwise direction of the tube (see McGraw-Hill, Encyclopedia of Science and Technology, 6th Edition, Vol. 19, p.363). This type of device is usually used for guiding microwaves.

Since the present application is directed to the use of optic fibres in combination with light (visible or invisible) in a sorting device, the use of the terms "waveguide", "waveguide technology" and "electromagnetic radiation" in the claims and in the description is inappropriate and in contradiction to Article 6, Guidelines III-4.3, III-6.1 and III-6.2 PCT.

- 2.) There appears to be no difference between the subject-matter of claims 8 and 9 (Guidelines III-5.1 PCT).
- 3.) It is not possible to **divide** a bundle of optical waveguides into **one** concentric bundle. Thus, the words "one or" have no meaning in claim 16.
- 4.) In claim 21, the relative terms "large" and "high" are used (Guidelines III-4.5 PCT).